

WHAT IS CLAIMED IS:

1. A moving image watermarking method using a human visual system, comprising the steps of:
 - a) obtaining a watermark value by exclusive-ORing a random key value and a binary value of a logo image;
 - b) separately performing a plurality of masking operations;
 - c) obtaining a global masking value through the separate masking operations;
 - d) obtaining a watermarked frame value by adding a watermark value weighted by the global masking value and a control variable to an original frame value; and
 - e) inserting a watermark into a moving image frame using the watermarked frame value.
2. The watermarking method according to claim 1, wherein the step b) comprises the steps of:
 - b1) performing a spatial masking operation; and
 - b2) performing a motion masking operation.
3. The watermarking method according to claim 2, wherein the step

b1) comprises the steps of:

adjusting contrast of the moving image frame; and

extracting edges from the contrast-adjusted frame.

4. The watermarking method according to claim 2, wherein the step

b2) comprises the steps of:

obtaining a luminance difference between a current frame and a previous frame; and

extracting edges from the current frame.

5. The watermarking method according to claim 2, wherein the step

b) further comprises the step of performing a frequency masking operation.

6. The watermarking method according to claim 1, further comprising the steps of:

comparing an image quality of the watermarked frame with an image quality set to a target; and

decreasing a control variable by a predetermined value if the image quality of the watermarked frame is less than the target image quality, and increasing the control variable by a predetermined value if the image quality

of the watermarked frame is greater than the target image quality.

7. The watermarking method according to claim 6, wherein the image quality is estimated on the basis of Peak-Signal-to-Noise Ratio (PSNR).

8. The watermarking method according to claim 1, further comprising the step of f) extracting the watermark, the step f) comprising the steps of:

subtracting the watermarked frame value from an original frame value to obtain a subtracted result value; and

exclusive-ORing the subtracted result value and a random variable obtained by a key value, and obtaining an exclusive-ORED result.

9. A spatial masking method, comprising the steps of:

adjusting contrast of a moving image frame; and

extracting edges from the contrast-adjusted frame.

10. A motion masking method, comprising the steps of:

obtaining a luminance difference between a current frame and a previous frame; and

extracting edges from the current frame.

11. A computer readable medium including program codes executable by a computer to perform a moving image watermarking method using a human visual system, comprising:

obtaining a watermark value by exclusive-ORing a random key value and a binary value of a logo image;

separately performing a plurality of masking operations;

obtaining a global masking value through the separate masking operations;

obtaining a watermarked frame value by adding a watermark value weighted by the global masking value and a control variable to an original frame value; and

inserting a watermark into a moving image frame using the watermarked frame value.